

CLAIMS

1. A sub-assembly for a vehicle suspension system,
comprising:

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a leaf spring;

a pair of mountings located at respective fore and
aft ends of the leaf spring and adapted to be attached
10 to respective ones of a pair of fore and aft brackets
secured to the frame of an associated vehicle; and

complementary means associated with the leaf spring
and with at least one of the fore and aft mountings and
15 adapted to permit adjustment of the free assembly length
of the spring between its fore and aft mountings during
assembly of the sub-assembly.

2. A sub-assembly according to claim 1, wherein said
20 complementary means for permitting adjustment of the
free assembly length of the leaf spring between its fore
and aft mountings, comprises an oversize aperture in the
leaf spring, through which aperture spring securing
means of the mounting extends.

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3. A sub-assembly according to claim 2, wherein the
oversize aperture comprises a slot and said spring
securing means comprises a clamping bolt.

30 4. A sub-assembly according to claim 1, 2 or 3,
wherein the fore and aft mountings are adapted to mount

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the leaf spring to the frame of an associated vehicle directly.

5 5. A sub-assembly according to claim 4, wherein the leaf spring is adapted to be mounted to a vehicle frame by means of brackets secured to the vehicle frame.

10 6. A sub-assembly according to any of claims 1 to 3, wherein the fore and aft mountings are adapted to mount the leaf spring to the frame of an associated vehicle indirectly.

15 7. A sub-assembly according to claim 6, wherein the leaf spring is adapted to be mounted to the vehicle frame via an anti-roll device extending transversely of the frame.

20 8. A sub-assembly according to any preceding claim further comprising another mounting provided at or adjacent the centre of the leaf spring for mounting a transverse axle of the associated vehicle thereto.

25 9. A sub-assembly according to claim 8, wherein the other, axle mounting and the leaf spring also comprise complementary means adapted to permit adjustment of the free assembly length of the leaf spring during assembly of the sub-assembly.

30 10. A sub-assembly according to any preceding claim, wherein the spring is a multi-leaf spring with complementary adjustment means being associated with one end of at least one of the spring leaves and the

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corresponding fore or aft mounting and additional adjustment means being associated with another of the spring leaves, generally centrally thereof, and the other mounting for an axle.

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11. A sub-assembly according to any preceding claim, wherein the leaf spring comprises a single leaf, with only one complementary adjustment means provided at the fore or aft end thereof for co-operation with the
10 corresponding fore or aft mounting of the sub-assembly.

12. A sub-assembly for a vehicle suspension system, substantially as hereinbefore described with reference to the accompanying drawings.

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13. A vehicle suspension system comprising:

a vehicle frame;

20 a pair of spaced brackets located on each side of the frame and secured thereto at respective fore and aft ends thereof; and

a pair of sub-assemblies comprising respective leaf
25 springs each having a pair of mountings at respective fore and aft ends thereof and arranged on respective opposed sides, and extending longitudinally fore and aft, of the vehicle frame, with the fore and aft mountings of the springs being attached to respective
30 ones of the fore and aft frame brackets, and complementary means associated with each leaf spring and with at least one of the fore and aft spring mountings

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and adapted to permit adjustment of the free assembly length of each leaf spring between its fore and aft mountings during assembly of each sub-assembly and prior to the sub-assemblies being attached to the respective
5 vehicle frame brackets.

14. A system according to claim 13, wherein said complementary means of each sub-assembly for permitting adjustment of the free assembly length of each leaf
10 spring between its fore and aft mountings comprises an oversize aperture in each leaf spring, through which aperture spring securing means of the mounting extends.

15. A system according to claim 14, wherein the
15 oversize aperture comprises a slot in each spring and said spring securing means comprises a clamping bolt.

16. A system according to claims 13, 14 or 15, wherein the fore and aft mountings mount each leaf spring to the
20 vehicle frame brackets directly.

17. A system according to claim 13, 14 or 15, wherein each leaf spring is mounted to one of the vehicle frame brackets indirectly via an anti-roll device, such as an
25 anti-roll bar or tube, extending transversely of the vehicle frame.

18. A system according to any of claims 13 to 17, wherein another mounting is provided at or adjacent the
30 centre of each leaf spring, such mounting and each leaf spring having associated complementary means adapted to permit adjustment of the free assembly length of each

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leaf spring during assembly of each sub-assembly of the suspension system.

19. A system according to claim 18, wherein the other
5 mountings mount the leaf springs to respective opposed ends of an axle extending transversely of the vehicle frame.

20. A system according to any of claims 13 to 19,
10 wherein each leaf spring comprises a single leaf, with an oversize aperture through which a clamping bolt or other spring securing means extends, provided in each single leaf at only one end thereof.

21. A system according any of claims 18 or 19, when
15 dependent upon any of claims 14 to 17, wherein each leaf spring is multi-leaf with an oversize aperture provided in at least one, and preferably only one, of the leaves of each spring at a fore or aft end thereof, and with
20 an oversize aperture provided in another of the leaves at the centrally located axle mounting.

22. A vehicle suspension system according to any of
claims 13 to 21, wherein the securement of at least one
25 of each pair of the brackets located on each side of the vehicle frame is adjustable after or whilst the sub-assemblies have been or are being attached thereto.

23. A method of assembling a sub-assembly for a vehicle
30 suspension system, wherein the sub-assembly comprises:

a leaf spring;

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a pair of mountings located at respective fore and aft ends of the leaf spring; and

5 complementary means associated with the leaf spring and with at least one of the fore and aft mountings for adjusting the free assembly length of the spring between its fore and aft mountings, and

10 wherein the method comprises:

manoeuvring the leaf spring generally longitudinally with respect to said at least one of its fore and aft mountings until the free assembly
15 length of the spring between its fore and aft mountings is determined accurately; and

securing the spring and mounting together to maintain the so-determined free assembly length of
20 the spring within the so-assembled sub-assembly.

24. A method according to claim 23, wherein the sub-assembly is provided with another mounting for an axle located at or adjacent the centre of the spring, with
25 further complementary means associated with the leaf spring and with the other, axle mounting also being provided, whereby, during assembly of the sub-assembly, the leaf spring is also manoeuvred generally longitudinally with respect to such mounting until the
30 free assembly length of the spring between its fore and aft mountings is determined accurately.

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25. A method according to claim 23 or 24, wherein said complementary means is provided with an oversize aperture in the or at least one of the leaves of the spring generally centrally thereof, a bolt of each mounting extends through that aperture and the leaf or leaves are manoeuvred longitudinally with respect to the mountings during assembly of the sub-assembly, to determine the free assembly length of the spring between its fore and aft mountings.

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26. A method according to any of claims 23 to 25, wherein, once the free assembly length of the spring has been determined accurately, the mounting is secured tightly to the leaf spring, for example, by tightening the mounting bolt, thereby, along with the secured fore or aft end of the spring and corresponding mounting, maintaining the so-determined free assembly length of the spring in the assembled sub-assembly.

20 27. A method according to any of claims 23 to 26, wherein, subsequent to assembly of the sub-assembly, the so-assembled sub-assembly is attached directly to one side of a vehicle frame by means of frame brackets.

25 28. A method according to any of claims 23 to 26, wherein, subsequent to assembly of the sub-assembly, the so-assembled sub-assembly is attached indirectly to one side of a vehicle frame via an anti-roll device extending transversely of the frame and secured to the
30 frame.

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29. A method according to any of claims 23 to 28, wherein a sub-assembly is attached to each side of a vehicle frame, with or without an associated transversely extending axle of the vehicle.

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30. A method according to claim 29, wherein attachment of a so-assembled sub-assembly to each side of a vehicle frame is adjusted to take into account positional tolerances therebetween.

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31. A method according to claim 30, wherein said adjustable attachment of a sub-assembly to each side of a vehicle frame is effected by means of a combination of bolts and oversize holes associated with each sub-assembly and the vehicle frame.

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